SIEMENS

MOBILETT Plus/ -E/ -HP

SP

Installation Instructions

Installation of Dose Area Product measuring system

Kit Part No. 66 13 082

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Purpose

This document describes how to install a DAP measuring system (Dose Area Product measuring system) on a MOBILETT Plus/ Plus E/ Plus HP.

General

The DAP equipment is designed for the measurement of the area kerma product (kerma = kinetic energy released in matter) during an X-ray examination. It is especially used to record the radiation dose to which the patient is exposed.

Systems / products

This installation instruction is only valid for:

MOBILETT Plus with Serial No. higher than 2350
MOBILETT Plus E with Serial No. higher than 10200
MOBILETT Plus HP with Serial No. higher than 30001

Important note

Store the document "Supplement to the Instructions for Use" together with the MOBILETT Instructions for Use as a reference on how to use the DAP meter after installation.

NOTE	**To facilitate possible troubleshooting, store this document along with the Technical Manual.**

Components included

The kit (Part No. 66 13 082) contains the following parts:

Pos No.	Quantity	Part No.	Name
1	2	65 57 156	Belt
2	1	65 84 960	DAP ionization chamber
3	1	65 61 992	Cable K9a, K9b, K21, K22, K23
4	1	65 61 927	Cable K52a, K52b, K23, K24, K25
5	1	65 78 772	Board D70
6	1	65 84 937	Lower arm cover with mounted display
7	1	65 84 697	Upper arm cover
8	1	65 84 655	Collimator cover incl. handle
9	20	64 57 840	Cable ties, 2.5x100mm
10	10	60 89 577	Cable ties, 4.7x195mm
11	1	65 08 985	Clamp for cable to Ionization chamber
12	1	60 94 023	Spiral cable tie, length 260 mm at rest
13	8	69 99 361	Soldering coil

Pos No.	Quantity	Part No.	Name
14	1	66 11 107	Shrinking tubes, length 150 mm
15	1	65 82 407	Shrinking tube for twisted cables, length 40 mm
16	1	66 11 115	Shrinking tube for K9, length 50 mm
17	1	66 13 558	Flat tie holder
18	1	65 84 531	Mounting bracket/wedge for board D70
19	2	65 84 796	Spacer for the transport safeguard
20	1	65 84 853	Power supply
21	1	65 61 745	Cable K71 (board D70)
22	1	60 22 966	Screw (MC6S 3x8 mm) for the D70 wedge
23	2	60 32 965	Stop screw (SK6SS 6x16mm)
24	3	60 23 485	Screw (MC6S 5x16mm)
25	1	60 23 162	Screw (MC6S 4x8mm)
26	2	62 29 400	Screw (MRX-TT 5x10mm)
27	6	65 91 536	Screw (PT 4x8mm)
28	3	60 34 573	Nut (M6NY 5mm)
29	10	60 32 366	Washer (KB 5.1mm)
30	1	61 68 269	Washer for board D70 (BRB 4.3mm)
31	2	65 84 663	Lock strip for Ionization chamber
32	1	66 31 001	This instruction
33	1	67 96 544	Flat connector
34	1	65 28 108	Label kit
35	1	66 08 330	Supplement to the Instructions for Use (English)
36	1	66 08 983	Supplement to the Instructions for Use (German)
37	1	66 08 967	Supplement to the Instructions for Use (French)
38	1	66 08 975	Supplement to the Instructions for Use (Spanish)
39	1	66 08 991	Supplement to the Instructions for Use (Swedish)
40	1	66 09 007	Supplement to the Instructions for Use (Italian)
41	1	66 09 015	Supplement to the Instructions for Use (Finnish)

NOTE

Some components will not be used during installation, depending on the type of unit the kit is installed on. Some components also have spare parts.

Tools / documents required

- Standard installation tools
- Soldering iron
- The document Service Instructions for the relevant MOBILETT
- Set of ring spanners / open end keys, including a key for 5.5 mm diameter
- Drill and drill bit for 5 mm diameter

Time required

- Approximately 8 hours for one customer support engineer.

Safety information

⚠WARNING

Dangerous x-ray radiation and/or dangerous electrical voltage during checks and adjustment work steps!

If not observed, death or serious physical injury can occur.

The following items must be complied with when performing service work and tests:

- **The product-specific safety information in the documents,**
- **The general safety information contained in ARTD Part 2.**

- **Connect the MOBILETT only to a mains power supply outlet (receptacle) that corresponds to the installation requirements of VDE 0107 or to country-specific regulations.**
- **Remove or install boards only when the generator is switched OFF. Adhere to the ESD guidelines .**
- **Checks and adjustments performed with radiation ON are identified by the radiation warning symbol . Radiation protective clothing must be worn for this type of adjustment (see ARTD, Part 2).**

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Preparatory work

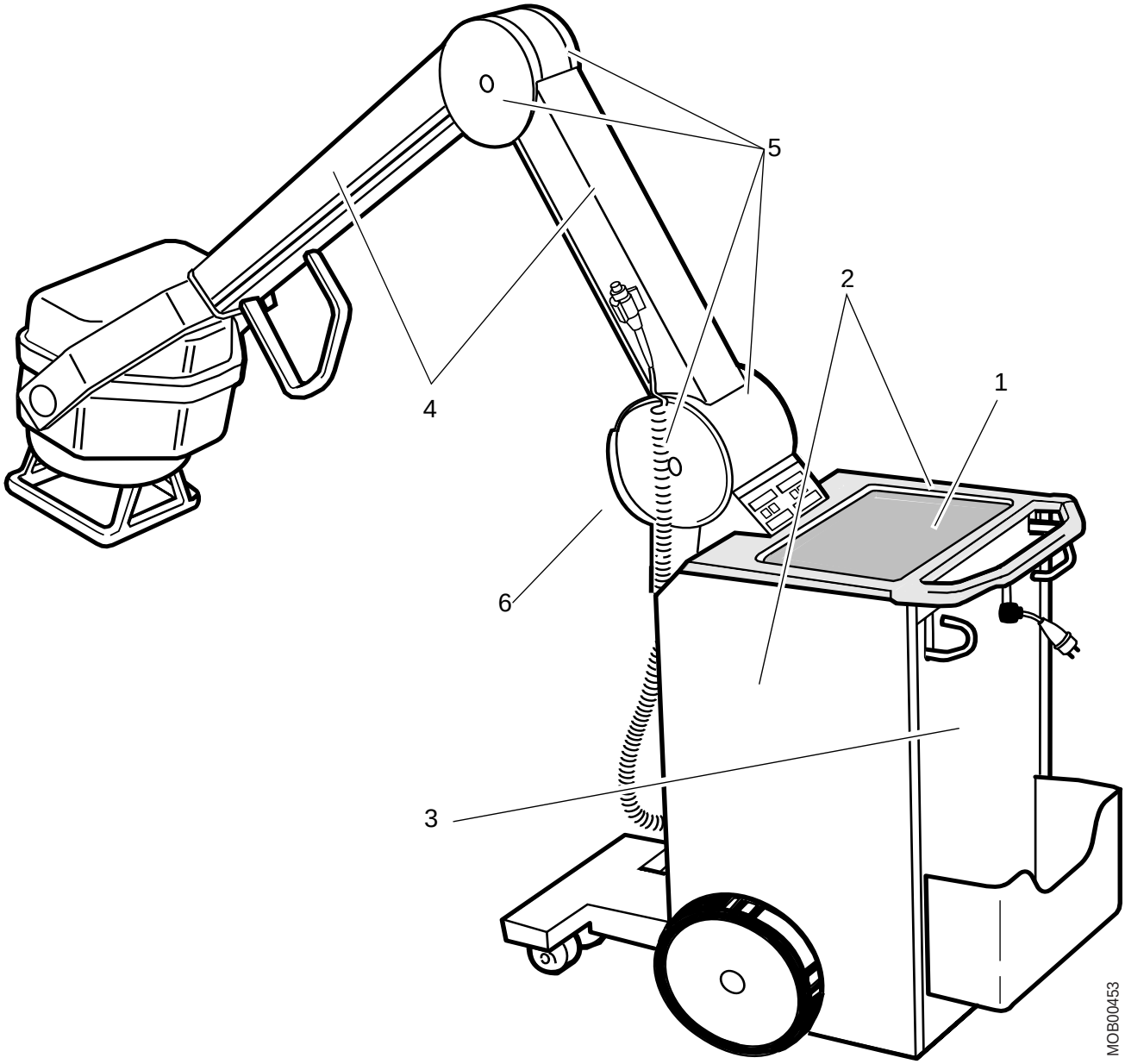

Fig. 1 Removal of MOBILETT covers

1. System OFF.
2. Disconnect the mains cable.
3. Remove the system upper cover (pos. 1 / Fig. 1). With MOBILETT Plus HP, disconnect K106.
4. Switch S10 to discharge position.
5. Wait 5 minutes to allow the capacitor banks to discharge. Then remove the side covers (pos. 2 / Fig. 1), the column cover (pos. 2 / Fig. 2) and the cover with the cassette compartment (pos. 3 / Fig. 1).
6. For MOBILETT Plus HP only: Remove the protective cover in front of the batteries. Disconnect one of the blue battery connector pairs.

7. Make sure the capacitor bank is discharged.

⚠WARNING

The capacitor bank might still contain up to 350 VDC.

Life-threatening hazard of electric shock.

Follow the safety procedures described in the document Service Instructions for detailed instructions on how to ensure the capacitor bank is discharged.

8. Remove the lower and upper arm covers (pos. 4 / Fig. 1).

NOTICE

For MOBILETTs with remote exposure switch system installed:

When removing the lower arm cover, be sure to unplug the module connector for the remote control from the electronics package alongside the main MOBILETT CPU board (see pos. 1 / Fig. 18). Dismount the IR sensor from the lower arm cover.

Remember how the cable was attached for future steps in section "Cable assembling"!

Removal of covers

1. Remove both the right and left circular covers (pos. 5 / Fig. 1). Unplug K1 from K1 on D1 (pos. 2 / Fig. 18) and remove the cover of the articulated shaft (pos. 6 / Fig. 1).

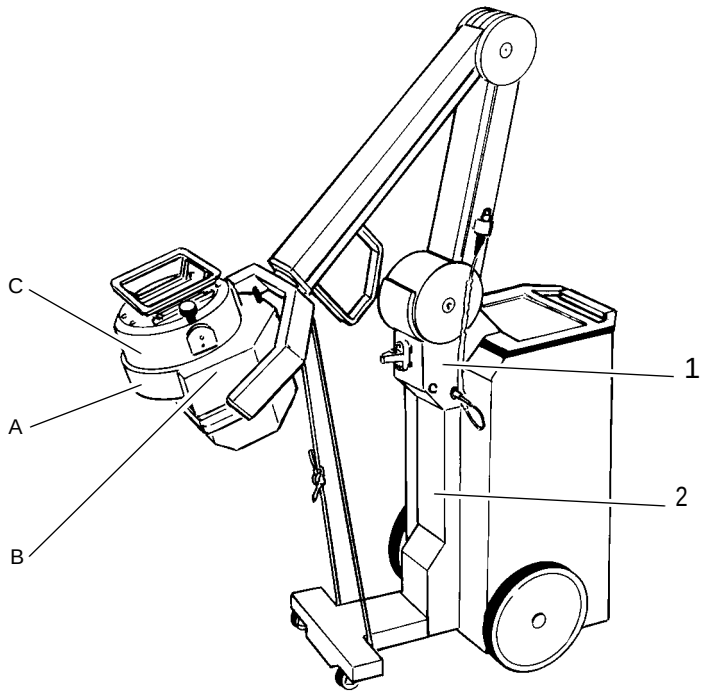

Fig. 2 Removal of collimator covers

2. Turn the single tank so that the collimator is facing upwards (Fig. 2).
3. Secure the arm and the single tank with the belts (Fig. 2).
4. Remove covers “A” and “B” (Fig. 2).
5. Remove the adjustment knobs according to Fig. 3.
1. Remove collimator cover “C” (Fig. 2) and the shadowcross inside.

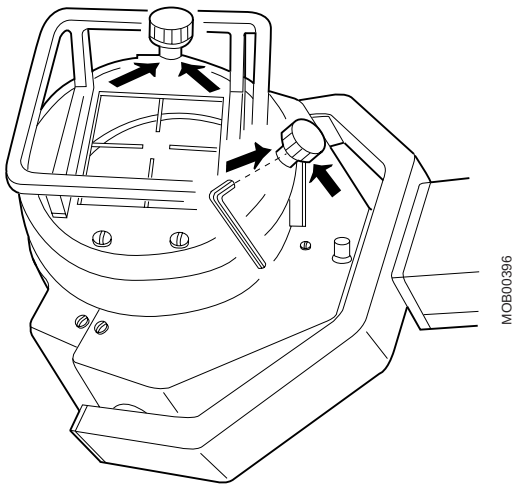

Fig. 3 Removal of collimator cover “C”

Cable assembling

1. Feed the ends of the cable with pin plugs marked K21 and K22 (65 61 992) from the left side of the MOBILETT (pos. 1 / Fig. 2). Insert them as shown in the figure below (pos. 1 / Fig. 4)

NOTICE

To facilitate further cable attachment work:

Be sure to leave enough cable so that pin plug K9a reaches the position K9 on the main CPU board D1 (see Fig. 18)

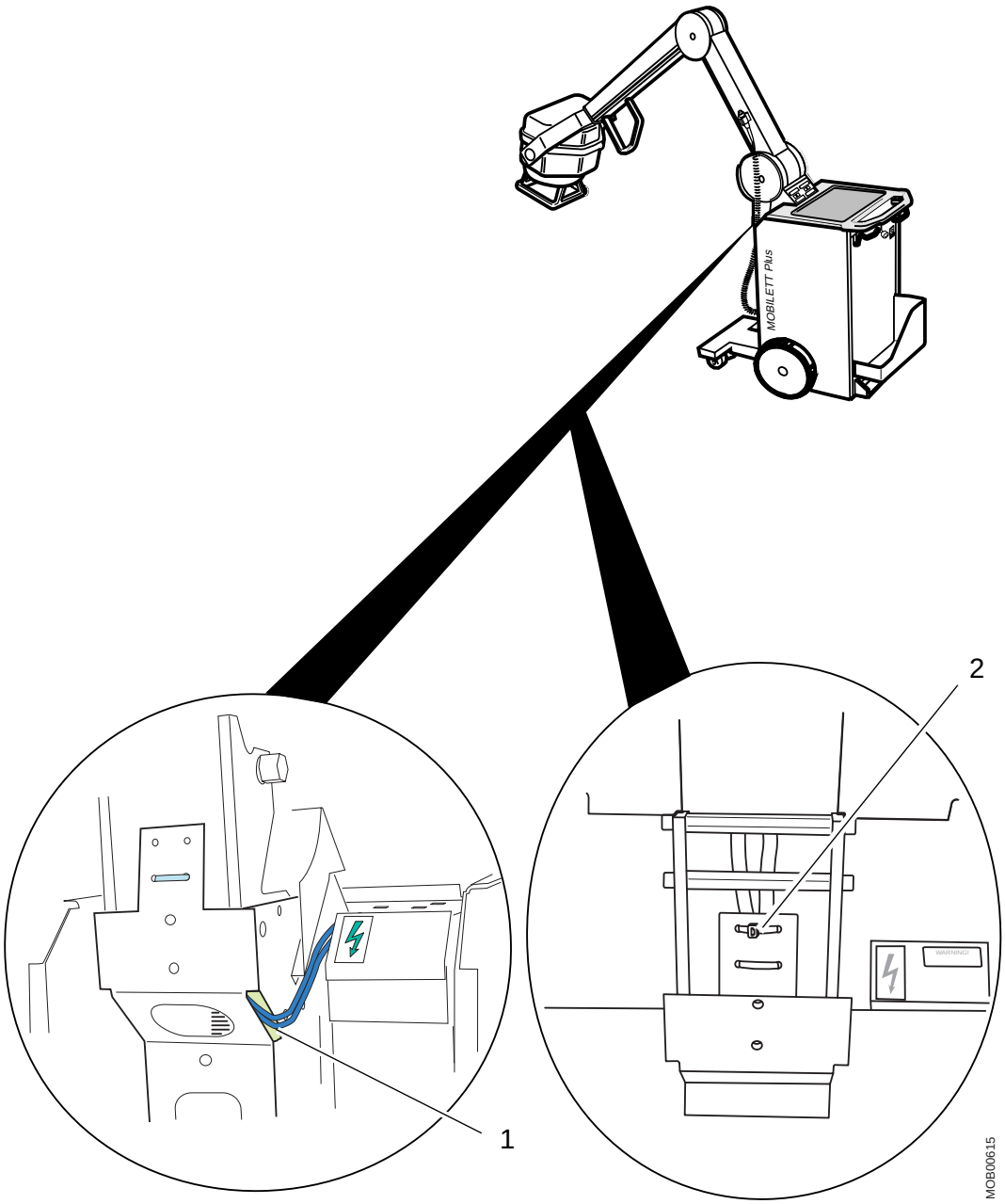

Fig. 4 Insertion of cables, cutting of cable tie

2. Cut and remove the upper cable tie (pos. 2 / Fig. 4).

3. Feed the pin plugs (K21 and K22) underneath the bar and **between** the two thick cables (Fig. 5).

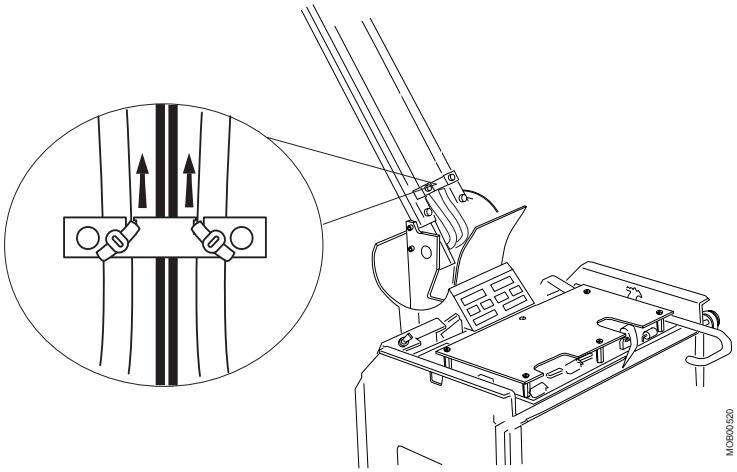

Fig. 5 Feeding cables

4. Insert the cable end with pin plug K22 into the joint between the upper and lower arm as shown in Fig. 6. Make sure the cable runs between the two thick cables.

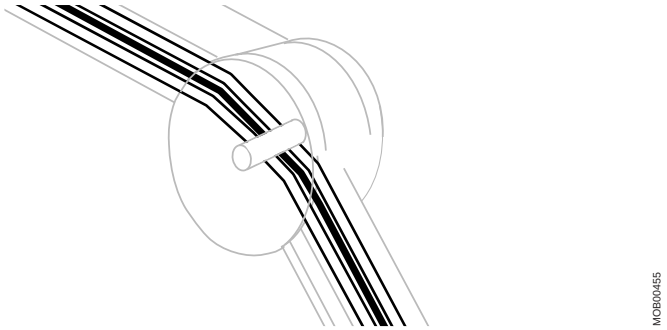

Fig. 6 Cables in joint

5. Fasten the cable with a cable tie (2.5x100mm) according to pos. 2 / Fig. 7. The pin plug K22 must have the same position as shown in Fig. 7, in line with the arm pieces (pos. 3 / Fig. 7).

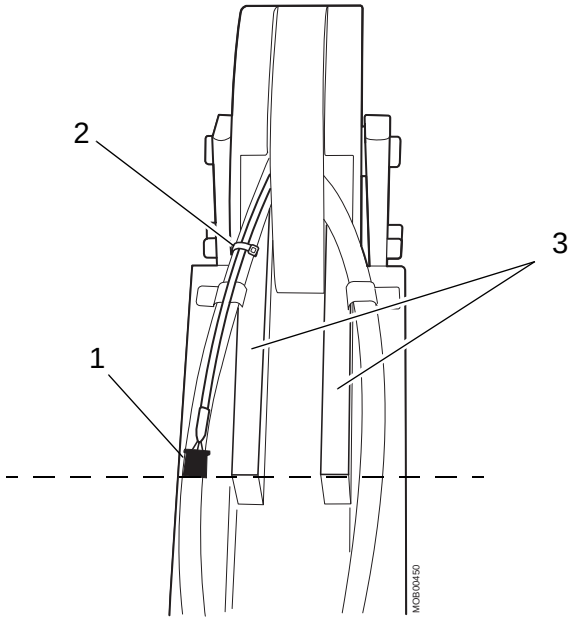

Fig. 7 Cable fastening on upper arm.

6. Place two cable ties (2.5x100mm) according to pos. 5 / Fig. 8.
7. Move the arm to see that the cable runs freely throughout the arm and is not stretched or trapped.

8.

NOTICE

For MOBILETTs with remote exposure switch system installed:

Mount the sensor on the new lower arm cover and thread the cable as previously described. Let the cover hang on the side of the arm (see pos. 6 / Fig. 8). If there are stickers on the old cover, transfer them to the new cover.

Wrap the remote control cable into the spiral cable tie together with the other cables according to step 8. by alternatingly turning it and pulling it downwards.

Pull out the cables (pos. 1/ Fig. 8) and make a loop. Wrap the cables with pin plugs K21 and K22 into the spiral cable tie (included in the delivery). Attach the spiral cable tie from approximately 2 cm above the bar (Fig. 8) and place it between the two thick cables.

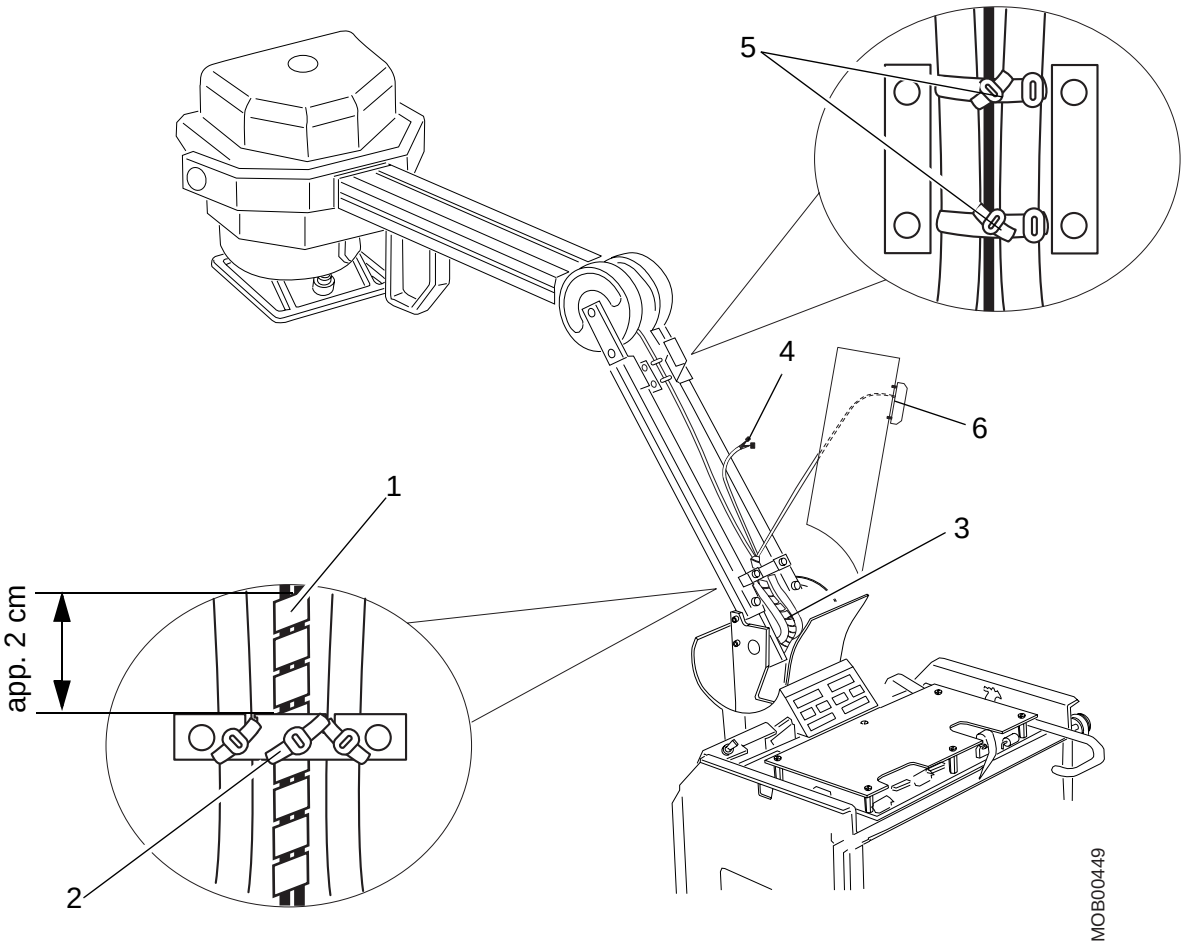

Fig. 8 Insertion of cables into the MOBILETT arm.

9. Place a cable tie (4.7x195mm) around the spiral cable tie (pos. 2 / Fig. 8).

10. Place a cable tie (4.7x195mm) around the spiral cable tie from behind (pos. 2 / Fig. 4). Be sure to leave a small loop (pos. 3 / Fig. 8) so they can be positioned in the lower joint parallel to the two thick cables.
11. Leave the pin plugs for the display (K21) at pos. 4 / Fig. 8.
12. Move the arm to see that the cable runs freely throughout the arm and is not stretched or trapped. This is especially important in the lower joint.

Collimator assembling

1. Dismount the light button and the associated angle bracket (pos. 1 / Fig. 9). Keep the cable clamp at pos. 2 / Fig. 9 undamaged.

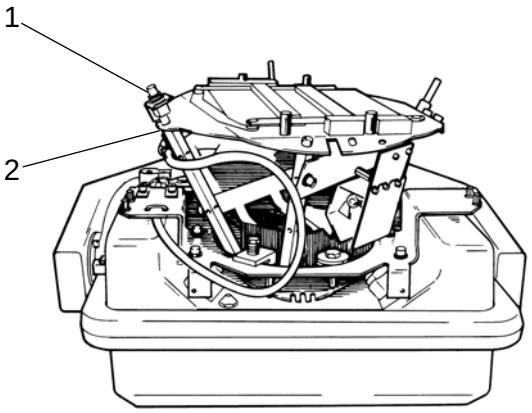

Fig. 9 Dismounting the light button and angle bracket

2. Cut the white and grey cables from the “old” light button (pos. 2 / Fig. 9) as close to the shrinking tubing as possible.

3. Mount board D70 to the associated bracket/wedge with one 4 mm screw (MC6S 4x8mm), pos. 1 / Fig. 10.
4. The bracket/wedge and the cable clamp are fastened with one 3 mm screw (MC6S 3x8mm) at pos. 7 / Fig. 10. Place a washer (BRB 4.3mm) between the screw and the cable clamp for proper fastening.

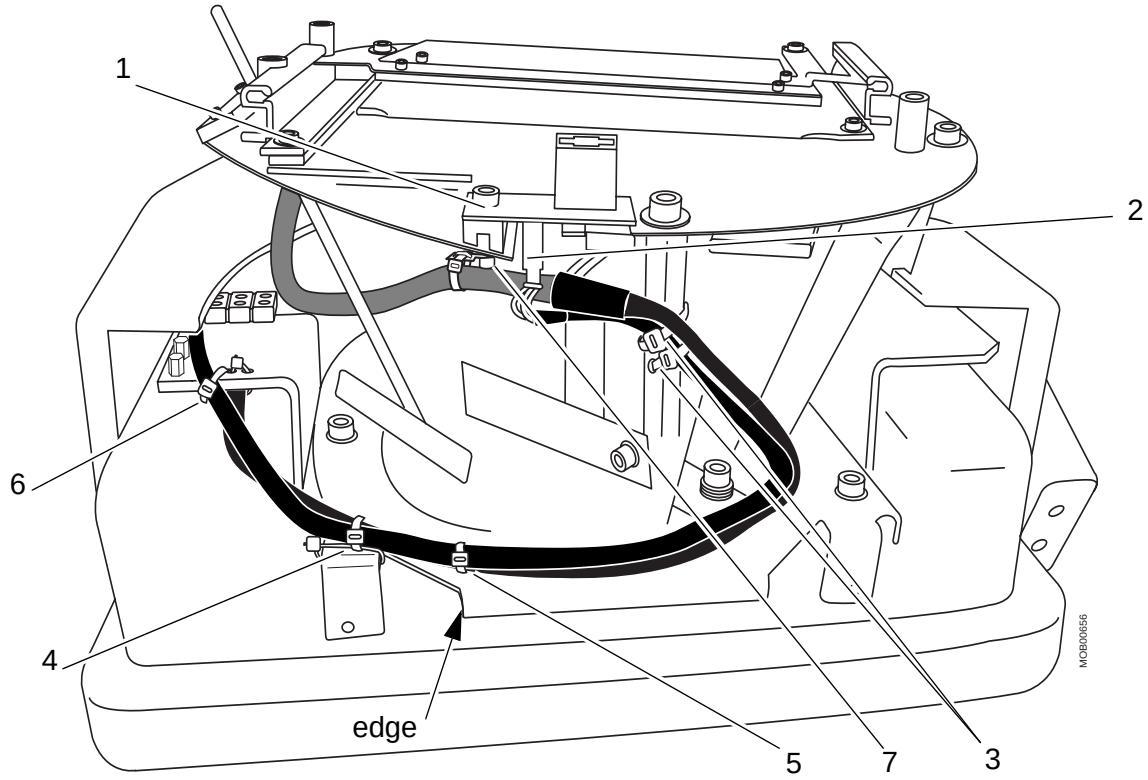

Fig. 10 Mounting of new angle bracket and positions of cable ties

5. Connect K71 of cable 65 61 745 at pos. 2 / Fig. 10.
6. Make sure the cables in Fig. 10 follow each other closely without slack.

NOTICE

In order to avoid adjustment problems:

Closely follow Fig. 10 when fastening the cable ties.

7. Place two cable ties (2.5x100mm) according to pos. 3 / Fig. 10. The lower cable tie is mounted through the hole of the shaft. Note that the old cable should not be fastened.
8. Fasten the cables with two cable ties (2.5x100mm) according to pos. 4 / Fig. 10. The cable tie holding the cables is fastened in another cable tie attached to the collimator.
9. Tie the two cables together with an additional cable tie (2.5x100mm) in line with the edge (pos. 5 / Fig. 10).
10. Fasten the new cable with a cable tie (2.5x100mm) according to pos. 6 / Fig. 10.

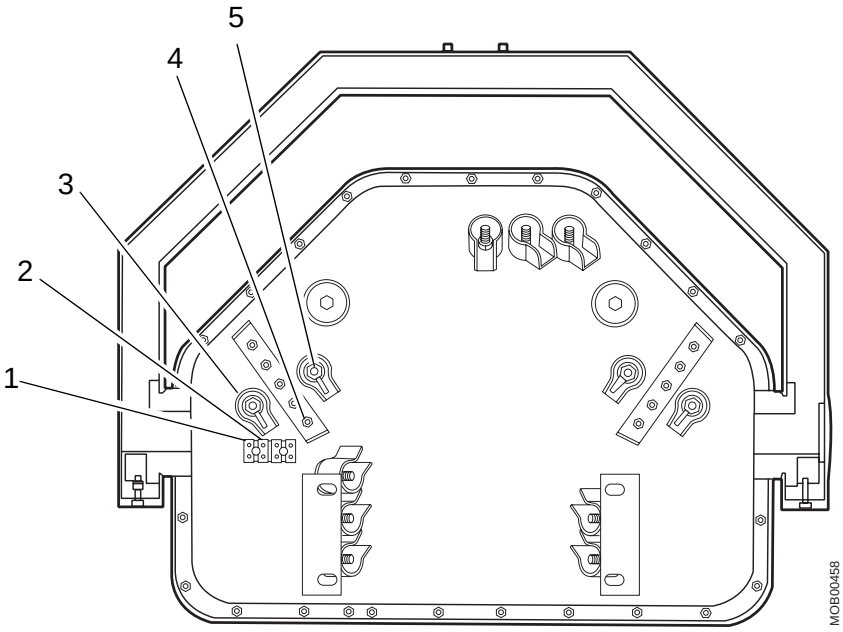

Fig. 11 Inside the single tank

11. Disconnect the yellow cable from the terminal at pos. 1 / Fig. 11.
12. Disconnect the white cable from the terminal at pos. 2 / Fig. 11.
13. Disconnect the orange cable from the terminal at pos. 3 / Fig. 11.
14. Disconnect the two white cables from the terminal at pos. 4 / Fig. 11 (nut dimension 5.5 mm).
15. Disconnect the brown cable from the terminal at pos. 5 / Fig. 11.

16. Cut away the shrinking tubing at pos. 1 / Fig. 12.

⚠CAUTION

Do not cut the cables!

If you accidentally cut the cables, they must be spliced.

Be sure to cut the shrinking tubing only, not the cables.

There are three twisted pair of cables inside: a white and green cable, a white and blue cable, and a white and purple (violet) cable.

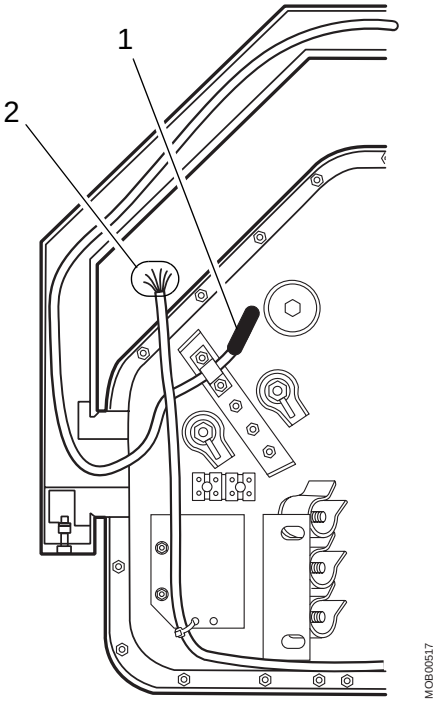

Fig. 12 Cutting of shrinking tubing and striping of cables

17. Separate the twisted white and blue cable, and the twisted white and purple cable.
18. Shrink the twisted white and green cable using a shrinking tube (65 82 407) with the others that were there before (leave out the twisted white and blue, the yellow and white, and the twisted white and purple cables).
19. Reconnect the cables as before, see pos. 3 (orange), 4 (2 x white) and 5 (brown) / Fig. 11.
20. Cut the shrinking tubing of the twisted white and blue cable and the twisted white and purple cable and strip the cables.

NOTICE

Do not shorten the free ends! Strip the cables carefully, approximately 10 mm.

21. Strip the six cables at pos. 2 / Fig. 12 approximately 10 mm.

22. Splice the stripped cables in pairs of two with soldering coils according to the table below and according to pos. 1 / Fig. 13.

Twisted cable pairs:	**To cables from board D70**:
White	Brown
Purple	Red
Twisted cable pairs:	**To cables from board D70**:
White	Black
Blue	Blue
Twisted cable pairs:	**To cables from board D70**:
White	Yellow
Yellow	Orange

23. Solder each of the six sets of spliced cables (pos. 2 / Fig. 13).

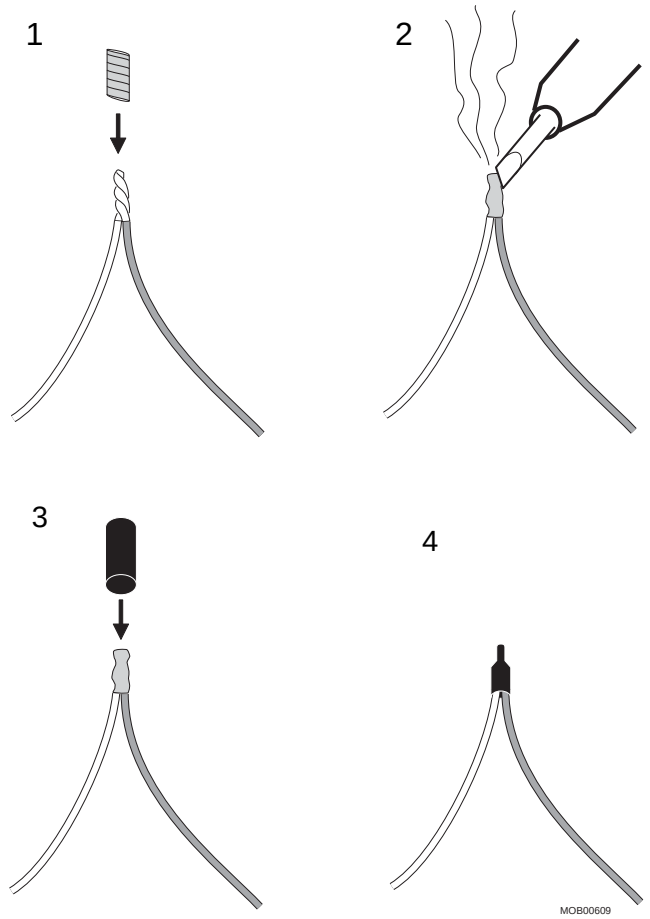

Fig. 13 Soldering and shrinking procedure

NOTE

Follow the figure above as closely as possible. Make sure the soldering and stripped cables are completely covered by the shrinking tubes to avoid short circuit.

24. Put shrinking tubes (66 11 107, cut to 20 mm length) over each of the newly soldered cables (see pos. 3 / Fig. 13) and shrink them (pos. 4 / Fig. 13).

25. Place two cable ties (2.5x100mm) according to pos. 1 / Fig. 14.

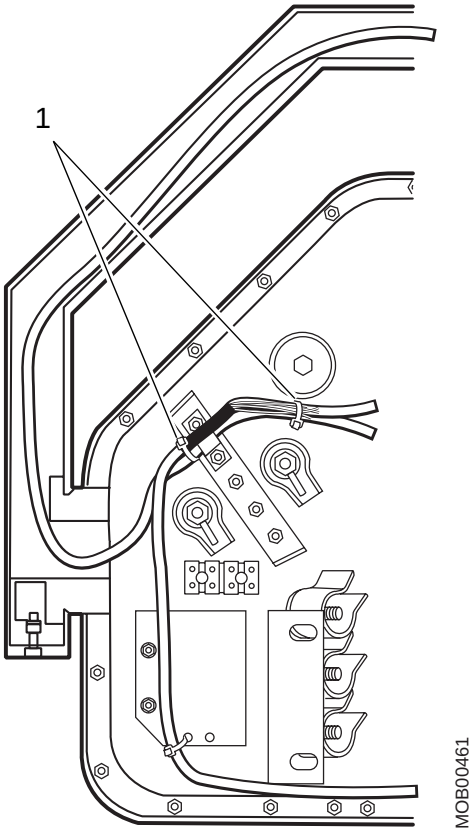

Fig. 14 Placing of cable ties

Connection of plugs to the main CPU board, D1

1. Remove the protection plate of the CPU board below to expose the main CPU D1 (see Fig. 18).
2. Disconnect pin plug K9 from board D1 (see Fig. 18).
3. Place the disconnected K9 cable in between the chassis frame and the D4 board (see Fig. 15).
4. Mount a flat tie holder according to pos. 1 / Fig. 15.
5. Place a cable tie (2.5x100mm) around the disconnected K9 cable according to pos. 2 / Fig. 15.

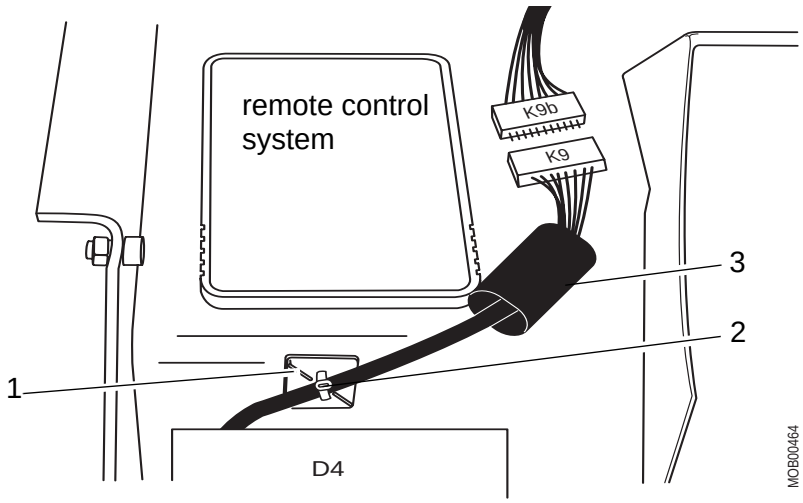

Fig. 15 Positioning of cable tie and shrinking tubing

6. Place the large shrinking tube (Part No. 66 11 115, 50 mm length) around the loose K9 pin plug (see pos. 3 / Fig. 15).
7. Connect pin plug K9 to K9b of cable 65 61 992 (see Fig. 15).
8. Shrink the shrinking tubing (see pos. 3 / Fig. 15) over the connected pin plugs K9 and K9b.

9. Place the cable according to Fig. 16. Make sure the cable runs underneath the flat conductor cables connected to board D1.

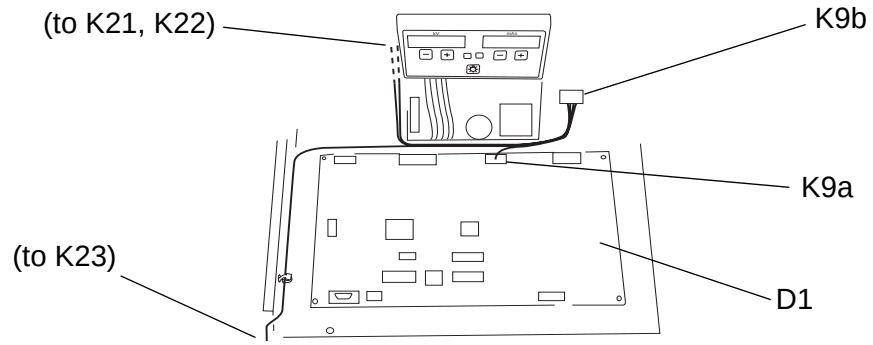

Fig. 16 Placing cable

10. Connect K9a to K9 on board D1 (Fig. 16).
11. Remount the protection plate over board D1.

Reassembly

1. Remount the collimator covers “A” and “B” (see Fig. 2).
2. Turn in the stop screws (Part No. 60 32 965) half way in the collimator.
3. Place the shadowcross in position with the aid of the two stop screws and mount the new collimator cover “C” (see Fig. 2).
4. After tightening two of the screws that hold the collimator cover “C”, the stop screws can be replaced with the remaining original screws.

NOTICE

For MOBILETTs with field size indicator installed:

Use the label kit (Part No. 65 28 108) and attach the labels according to the old cover.

Close the collimator lids and mount the adjustment knobs so that the “0”s on the knob scales are facing the arrows.
Check the mounting by opening the collimator lids and close them again completely. The “0” on the knob scale should be just in front of the arrows.

5. Mount the adjustment knobs.
6. Connect the pin plug K22 to K22 in the new upper arm cover (pos. 1 / Fig. 7).
7. Mount the new upper arm cover.
8. Mount the left and right circular covers on the upper and lower joint (pos. 5 / Fig. 1).

9. Check if there is a ground connector on the lower arm (pos. 1 / Fig. 17). If not, remove the screw and mount the one included in the kit (Part No. 67 96 544). Make sure it is pointing upwards.

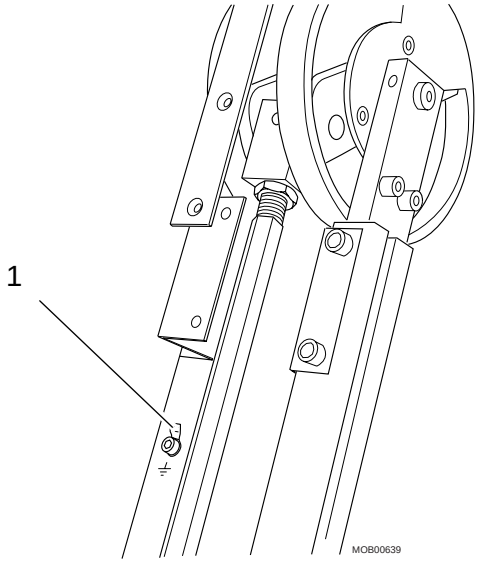

Fig. 17 Ground connection in lower arm

10. Connect the pin plugs K21 to the new display and mount the new lower arm cover and the ground connector.
11. For MOBILETT's with a remote exposure control system, connect the remote exposure pin plug (see pos. 1 / Fig. 18).

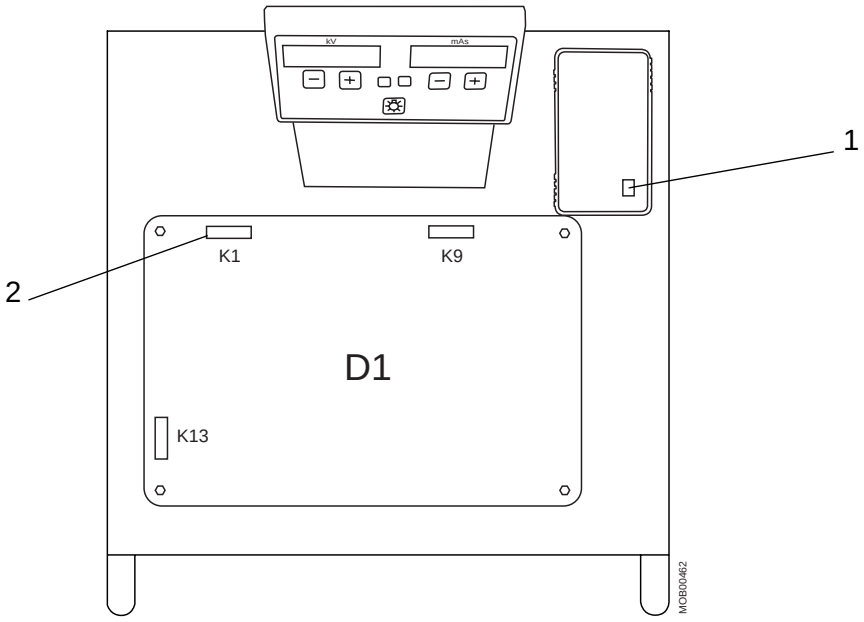

Fig. 18 Connecting pin plugs

12. Connect K1 to K1 on D1 (pos. 2 / Fig. 18).
13. Mount the column cover (pos. 2 / Fig. 2).
14. Mount the cover of the articulated shaft (pos. 6 / Fig. 1).

15. Mount the spacers for the transport safeguard (Part No. 65 84 796) and then the transport safeguard with the rubber dampers.

NOTICE

The next step is to install a new power supply.

Different procedures apply for MOBILETT Plus/ -E and MOBILETT Plus HP. Follow the procedures described in the section for the applicable unit.

Installation of power supply, MOBILETT Plus HP only!

1. For MOBILETT plus HP with a tilt bar, remove the tilt bar (see Fig. 19).

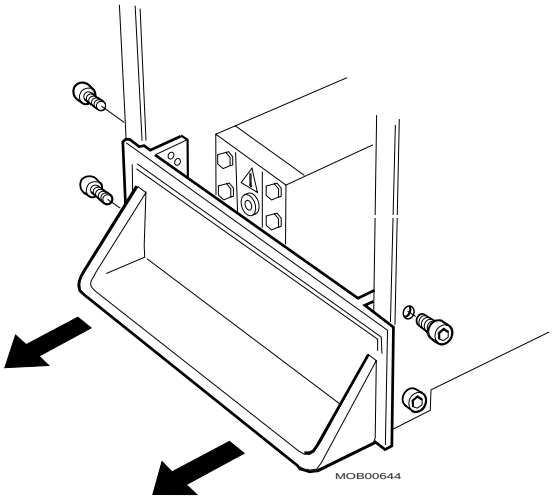

Fig. 19 Removal of tilt bar

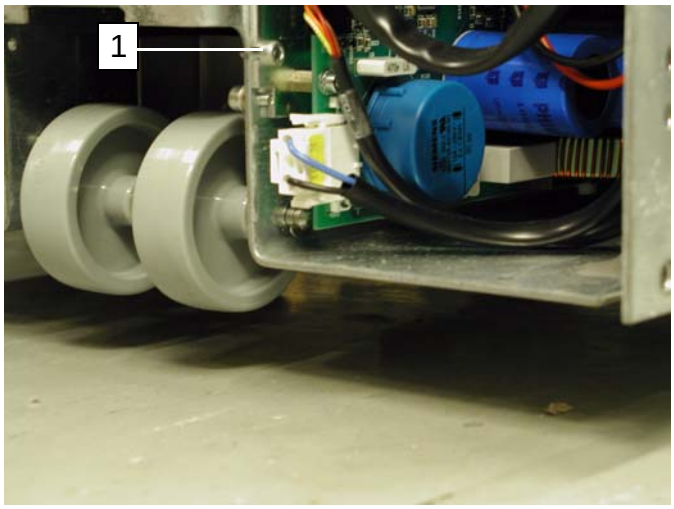

Fig. 20 Board D201, front

2. Remove pin plugs K201, K202 and K203 on board D201.
3. Remove the front screw (pos. 1 / Fig. 20).
4. Remove the two back screws (pos. 1 / Fig. 21).

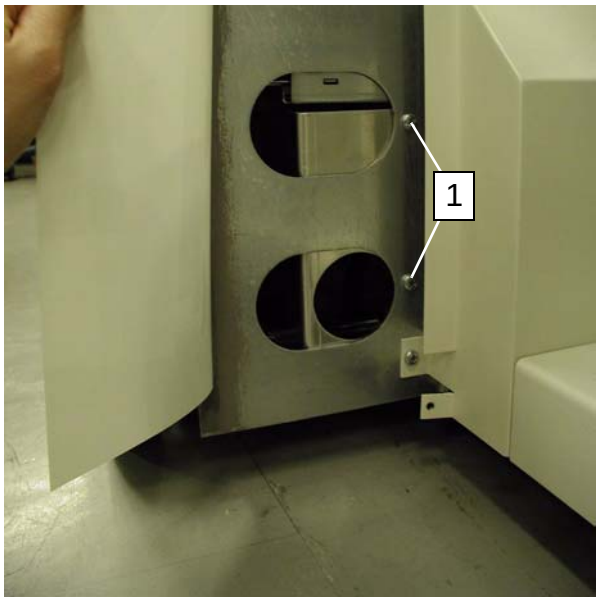

Fig. 21 Board D201, back

5. Remove board D201 including the aluminum plate and place it on a work bench.

⚠CAUTION **Sensitive electronic equipment!**

Improper handling could cause permanent damage to the circuits.

Follow ESD guidelines while working with the aluminum plate and mounting the new power supply and be careful not to damage board D201.

6. If needed, drill three holes with a diameter of 5 mm in the aluminum plate as shown in Fig. 22 for the new power supply unit. The distances are: A = 65 mm, B = 46 mm, C = 32.5 mm, D = 108 mm and E = 25 mm. Also drill a hole (5 mm diameter) as shown in pos. 1 / Fig. 22 to attach the cable to the new power supply.

⚠CAUTION

If drilling is necessary:

Drilling chips can cause injuries to eyes.

Use proper protection.

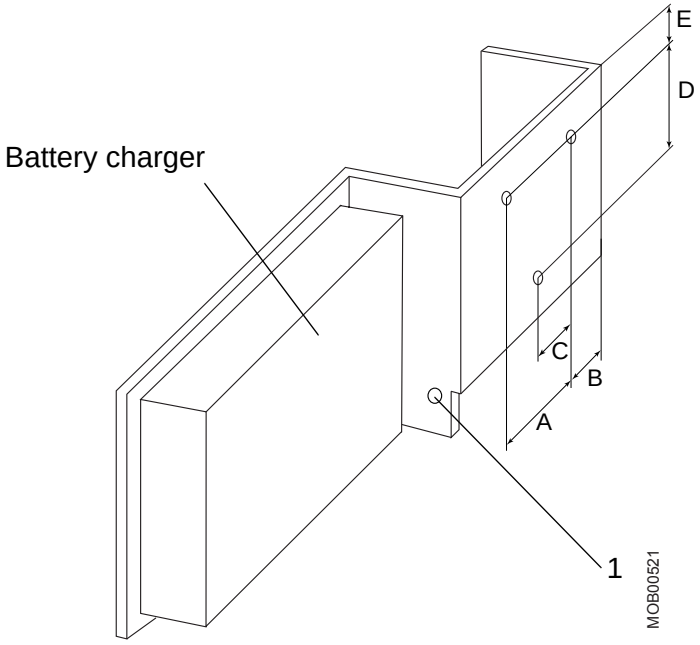

Fig. 22 Adjustments for new power supply

7. Cut the cable ties as shown in Fig. 23.

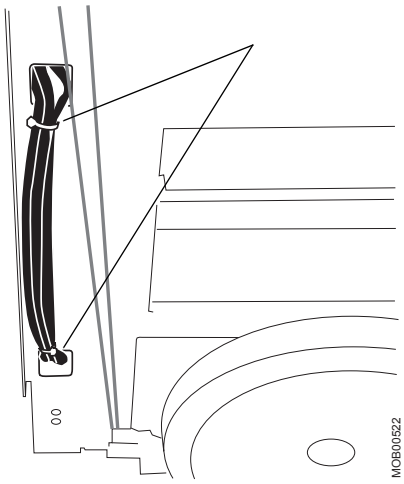

Fig. 23 Cutting cable ties

8. Disconnect pin plug K52 from board D8 (pos. 1 / Fig. 24).
9. Fasten the cable shielding connector with the screw holding the protective cover over board D8 (pos. 4 / Fig. 24). Replace the previously mounted washer for a washer (KB 5.1mm) included in the kit.
10. Attach pin plug K52b of the cable to pin plug K52, then attach pin plug K52a to K52 on the board (pos. 1 / Fig. 24).
11. Thread the ends with pin plugs K24 and K25 through the upper hole (pos. 2 / Fig. 24) and through the lower hole (pos. 3 / Fig. 24).

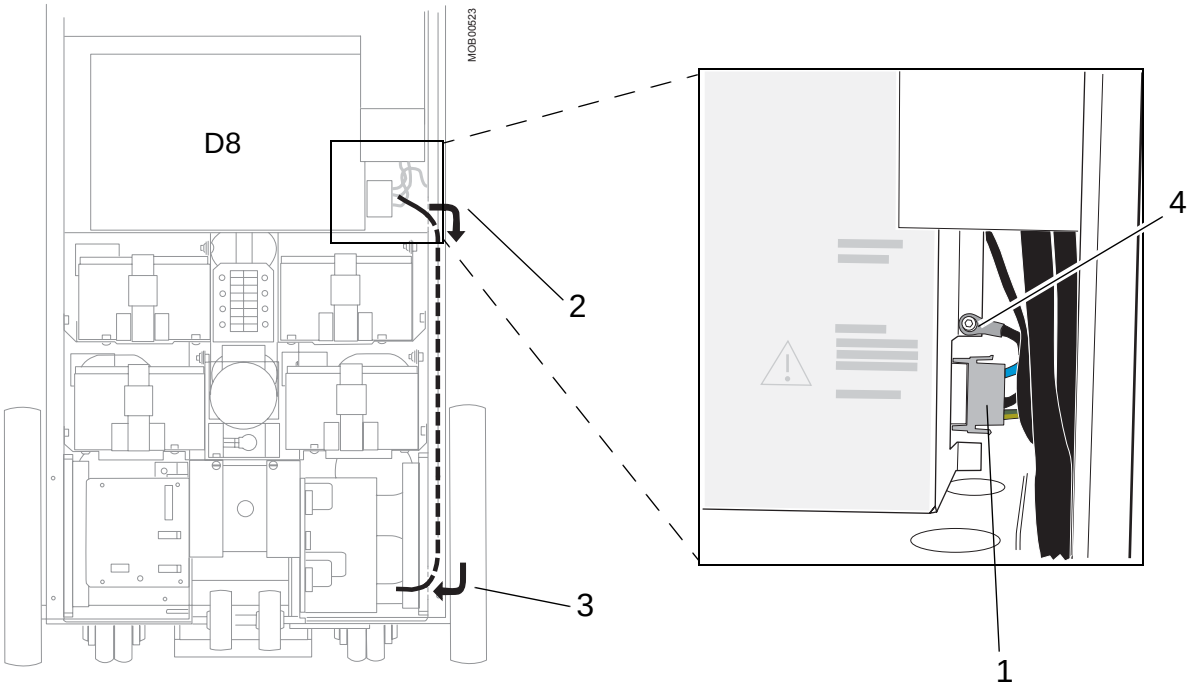

Fig. 24 Threading cable to new power supply

12. Mount the power supply box as shown in Fig. 25 using 5 mm screws (MC6S 5x16mm) and nuts. Be sure to use washers (KB 5.1mm, included in the kit).

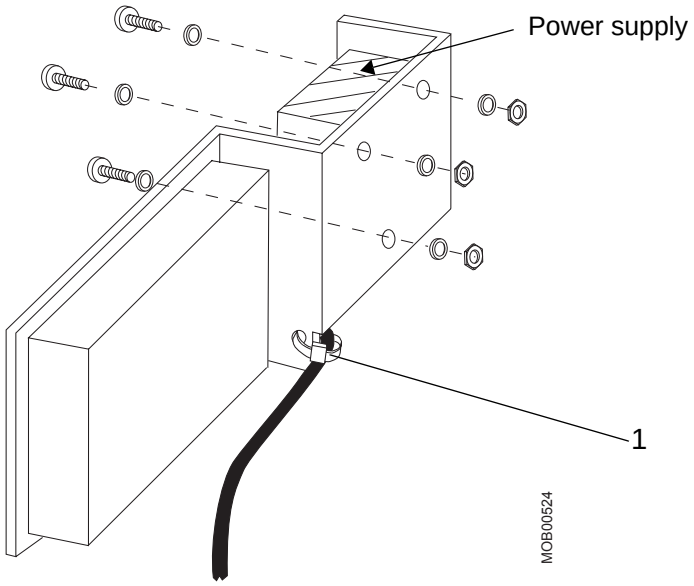

Fig. 25 Mount of new power supply

13. Fasten the cable to the new power supply unit (pin plugs K24 and K25) with a cable tie (2.5x100mm) through the hole (pos. 1 / Fig. 25).

14. The cable must also be fastened with cable ties (2.5x100mm) on the power supply unit (pos. 1 / Fig. 26).

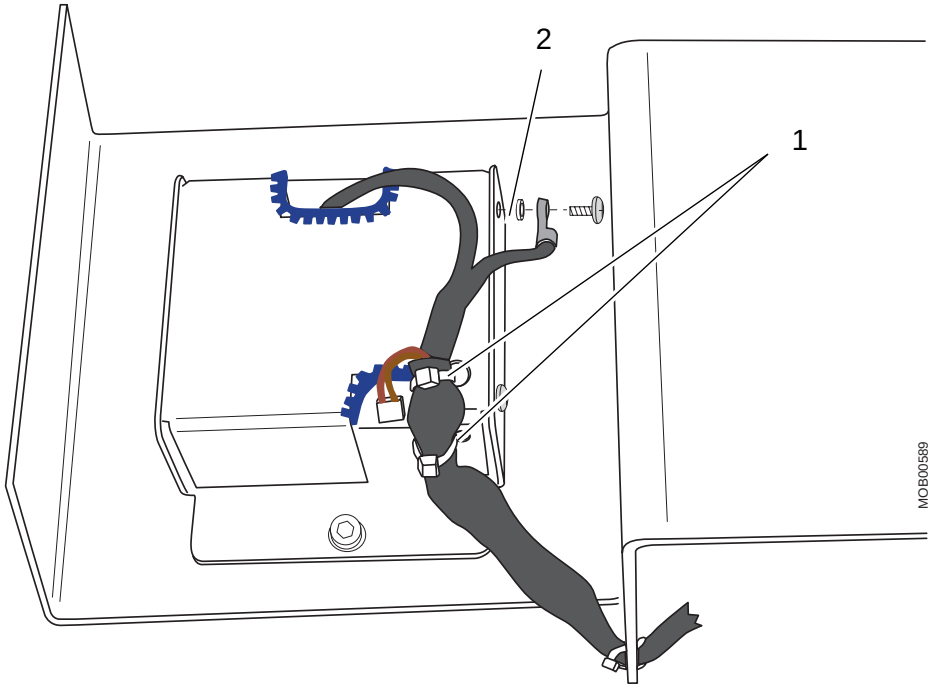

Fig. 26 Fastening cable to new power supply

15. Fasten the other cable shielding connector with a screw to the new power supply box (pos. 2 / Fig. 26). Remember to place a washer (KB 5.1mm) between the connector and the power supply box.

16. Remount the aluminum plate with board D201 and the power supply unit. Reconnect K201, K202 and K203 to board D201.

17. Replace the cable ties as shown in Fig. 23 to fasten the old cables and the new cable.

18. The end of the cable with pin plug K23 is placed as shown in Fig. 27. The cable runs on top of the protective cover over board D8 (pos. 1 / Fig. 27) along with the other cables.

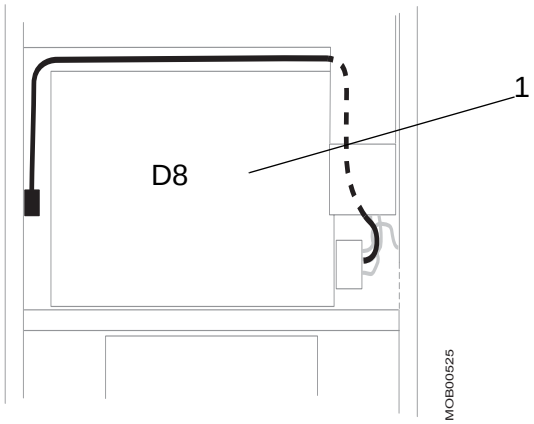

Fig. 27 Cable from power supply

19. Fasten the end with a cable tie (2.5x100mm) to one of the cables already present (see pos. 1 / Fig. 28). Leave about 7 cm hanging.

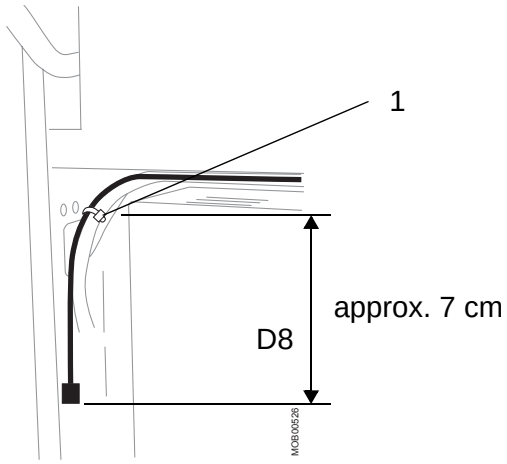

Fig. 28 Fastening of cable

20. Remove the cable tie (pos. 1 / Fig. 29). Then place the cable as shown in Fig. 29. The cable should run underneath the flat conductor cables attached to board D1.

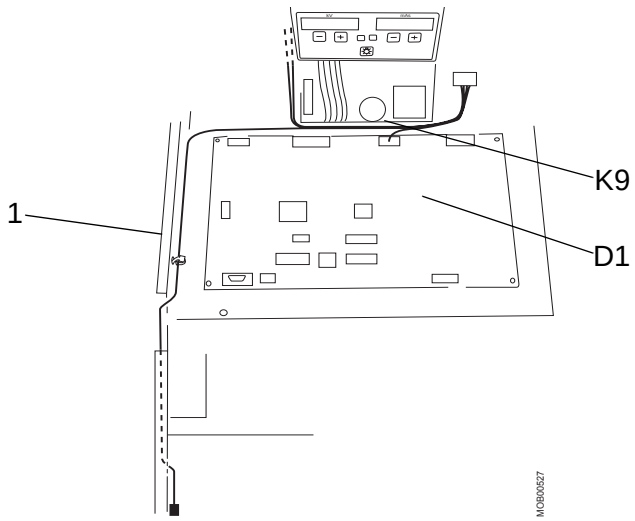

Fig. 29 Placing cable

21. Replace the cable tie (pos. 1 / Fig. 29) and make sure the cables run tightly together.
22. Remove the cable tie (pos. 1 / Fig. 30).
23. Pin plug K23 is threaded through the hole (pos. 2 / Fig. 30).

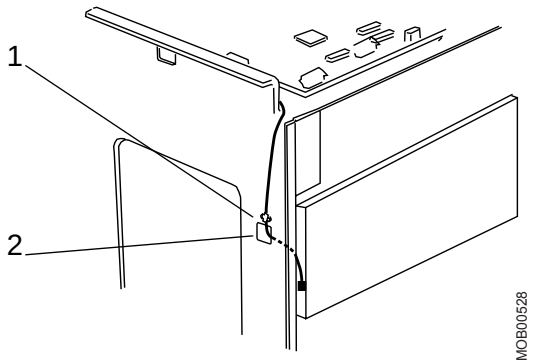

Fig. 30 Threading cable

24. Replace the cable tie (pos. 1 / Fig. 30). Make sure there is no slack.
25. Connect pin plug K23 to pin plug K23 of the cable of the new power supply unit.
26. Continue installation under section “Final assembly”.

Installation of power supply, MOBILETT Plus/ -E only!

1. For MOBILETT Plus/ -E with a tilt bar (see Fig. 31), remove the tilt bar.

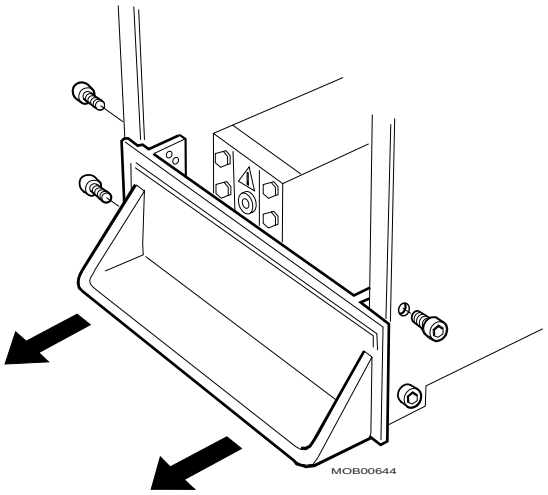

Fig. 31 Removing tilt bar

2. If needed, drill two holes of 4.5 mm diameter as shown in Fig. 32. The distances are: A = 65 mm, B = 40 mm and C = 10 mm. This is only necessary for some older units.

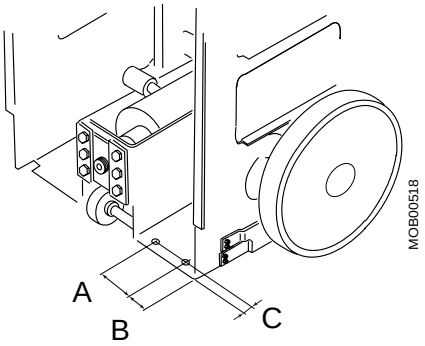

Fig. 32 Adjustments for new power supply

⚠CAUTION

If drilling is necessary:

Drilling chips can cause injuries to eyes.

Use proper protection.

3. Unplug pin plug K52 from board D8 (pos. 1 / Fig. 33).
4. Fasten the cable shielding connector with the screw holding the protective cover over board D8 (pos. 4 / Fig. 33). Replace the previously mounted washer with a washer (KB 5.1mm) included in the kit.
5. Attach pin plug K52b to pin plug K52. Then attach pin plug K52a to K52 on the board (pos. 1 / Fig. 33).

6. Thread the ends with pin plugs K24 and K25 through the upper hole (pos. 2 / Fig. 33) and through the lower hole (pos. 3 / Fig. 33).

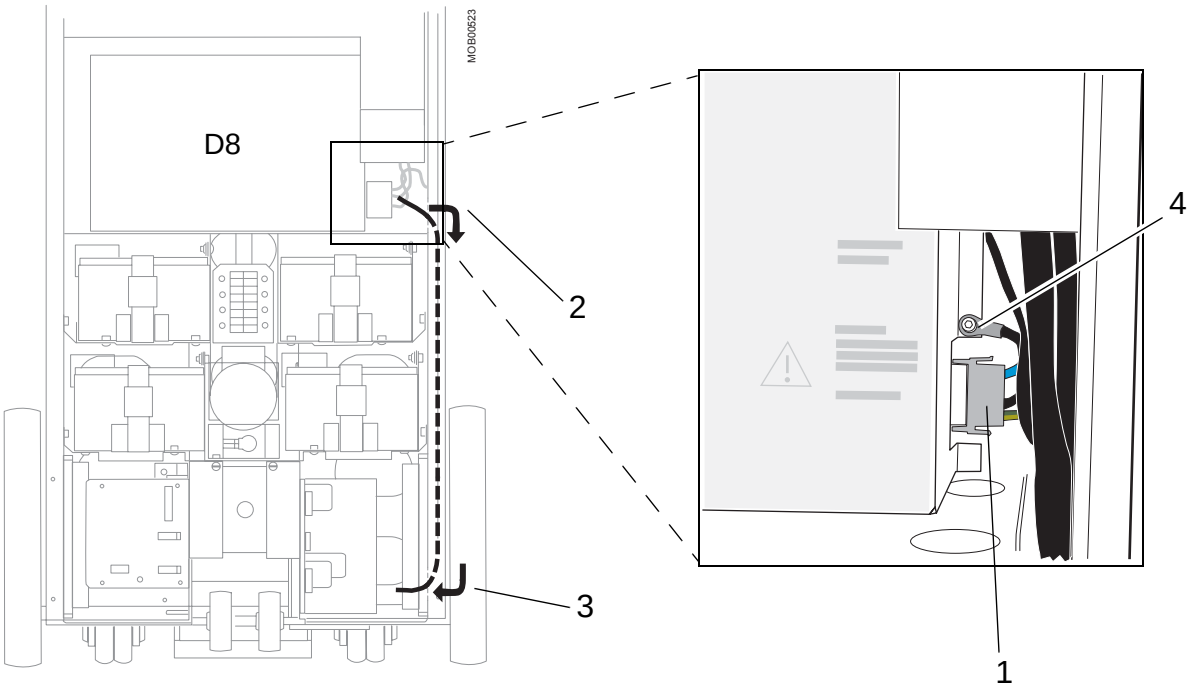

Fig. 33 Threading cable to new power supply

7. Fasten the cable with cable ties (2.5x100mm) (see Fig. 34).

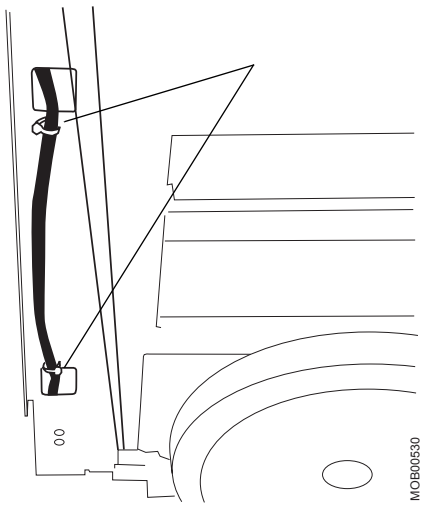

Fig. 34 Fasten cable ties

8. Fasten the pin plugs K24 and K25 to the new power supply.

9. Fasten the other cable shielding connector with a screw to the new power supply box (pos. 1 / Fig. 35). Remember to place a washer (KB 5.1mm) between the connector and the power supply box.

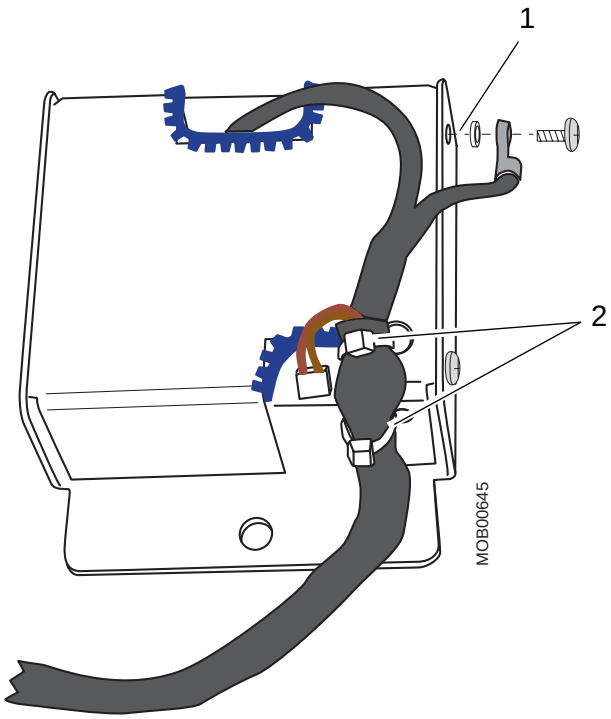

Fig. 35 Fastening cable to the new power supply

10. Fasten the cable on the power supply box with cable ties (2.5x100mm) according to pos. 2 / Fig. 35.

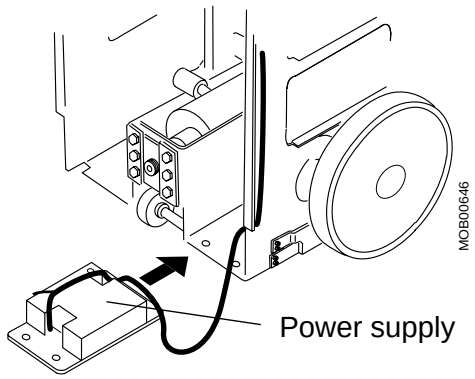

Fig. 36 Mount of new power supply

11. Mount the power supply as shown in Fig. 36 using two 5 mm screws (MRX-TT 5x10mm). Don't forget to place washers (KB 5.1mm) between the screw and power supply carrier.

12. The end of the cable with pin plug K23 is placed as shown in Fig. 37. The cable runs on top of the protective cover over board D8 (pos. 1 / Fig. 37) along with the other cables.

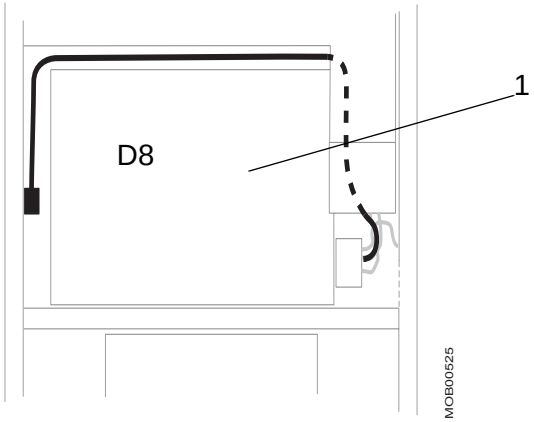

Fig. 37 Cable from power supply

13. Fasten the end with a cable tie (2.5x100mm) to one of the cables already present (see pos. 1 / Fig. 38). Leave about 7 cm hanging.

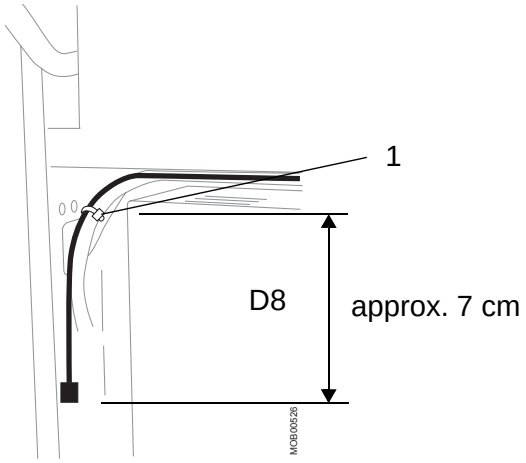

Fig. 38 Fastening of cable

14. Place the cable as shown in Fig. 39. The cable should run underneath the flat conductor cables attached to board D1.

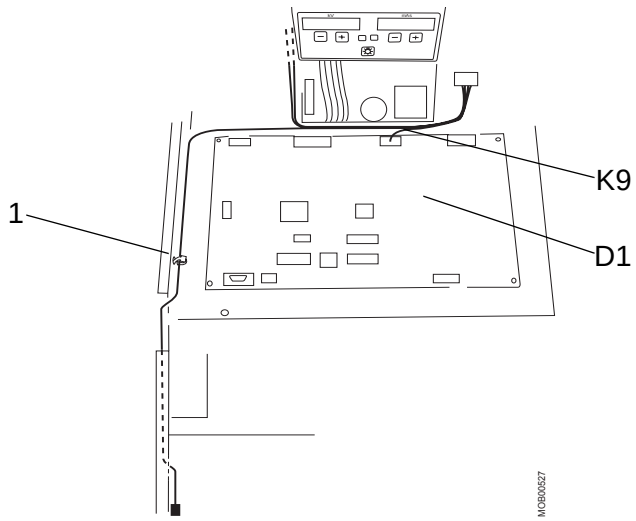

Fig. 39 Placing cable

15. Fasten the cable with a cable tie (2.5x100mm, pos. 1 / Fig. 39).
16. Pin plug K23 is threaded through the hole (pos. 2 / Fig. 40).

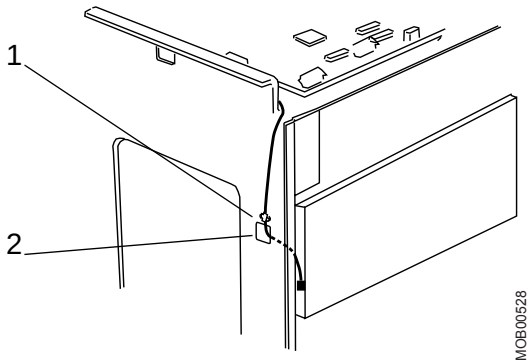

Fig. 40 Threading cable

17. Fasten the cable with a cable tie (2.5x100mm, pos. 1 / Fig. 40). Make sure there is no slack.
18. Connect pin plug K23 to pin plug K23 of the cable of the new power supply.
19. Continue installation under section “Final assembly”.

Final assembly

1. For MOBILETT Plus HP, reconnect the batteries and remount the protective cover.
2. Switch S10 back to operating position.
3. Mount the side covers (pos. 2 / Fig. 1) and the cover with the cassette compartment (pos. 3 / Fig. 1).
4. Mount the MOBILETT upper system cover (pos. 1 / Fig. 1). For MOBILETT Plus HP, first connect K106.

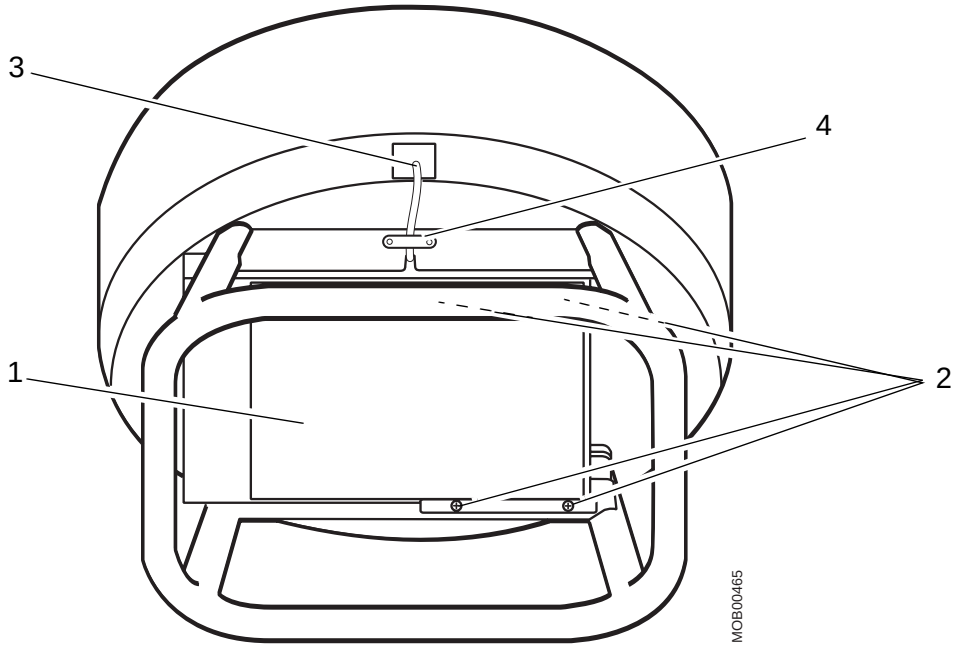

Fig. 41 Mounting of the DAP meter

5. Position the DAP meter according to pos. 1 / Fig. 41.
6. Lock the DAP meter with the lock strips and four screws (PT 4x8mm) (see pos. 2 / Fig. 41).
7. Connect the modular pin plug at pos. 3 / Fig. 41.
8. Fasten the clamp (pos. 4 / Fig. 41) with two screws (PT 4x8mm).

Final procedures

1. Adjust the collimator light field according to Chapter 9 in the document “Service Instructions”.

2. Perform a test exposure.
   Check if a measured value is shown on the DAP display.
3.

NOTE	**For MOBILETTs with remote exposure switch system installed:** **Check that the system works accordingly.**

4.

NOTE	**For MOBILETT Plus HP:** **Check that the motor system works accordingly.**

5. Press the test button on the DAP display. The value on the display should be between 80 - 120 µGym². If not, calibrate the system according to “Supplements to Service Instructions”.
6. Keep the document “Supplement to Instructions for Use” along with the original “Instructions for Use”.
7. Insert the chapter “Supplement to the Service Instructions” in the Technical manual under the same register as the Service Instructions.
8. Keep this document along with the Technical manual to facilitate possible troubleshooting.

Recalibration of the DAP measuring system

This instruction shows how to recalibrate the DAP measuring system by using an external ionization chamber (dose meter).

Required equipment

- Dose meter
- Calibration tool for DAP measuring system, Part No. 65 84 978

Recalibration procedure

1. System OFF.
2. Disconnect the DAP ionization chamber connector which is connected to board D70 (pos. 1 / Fig. 1).

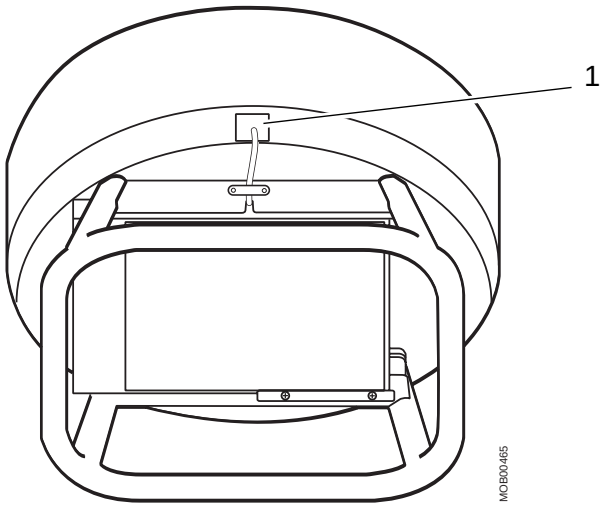

Fig. 1 Connector

3. Connect the DAP calibration tool between the connector and board D70.

NOTE **It is irrelevant which connector is the input or the output of the DAP calibration tool.**

4. System ON.

5. Set up the MOBILETT and the dose meter according to Fig. 2.

NOTE

If a semiconductor detector is used, the temperature/ pressure factor of the dose meter must be considered.

Otherwise a deviation against the factory calibration may occur.

6. Switch the collimator light on. The dose meter should be positioned in the center of the light field and freely in the air to avoid back scattering radiation.

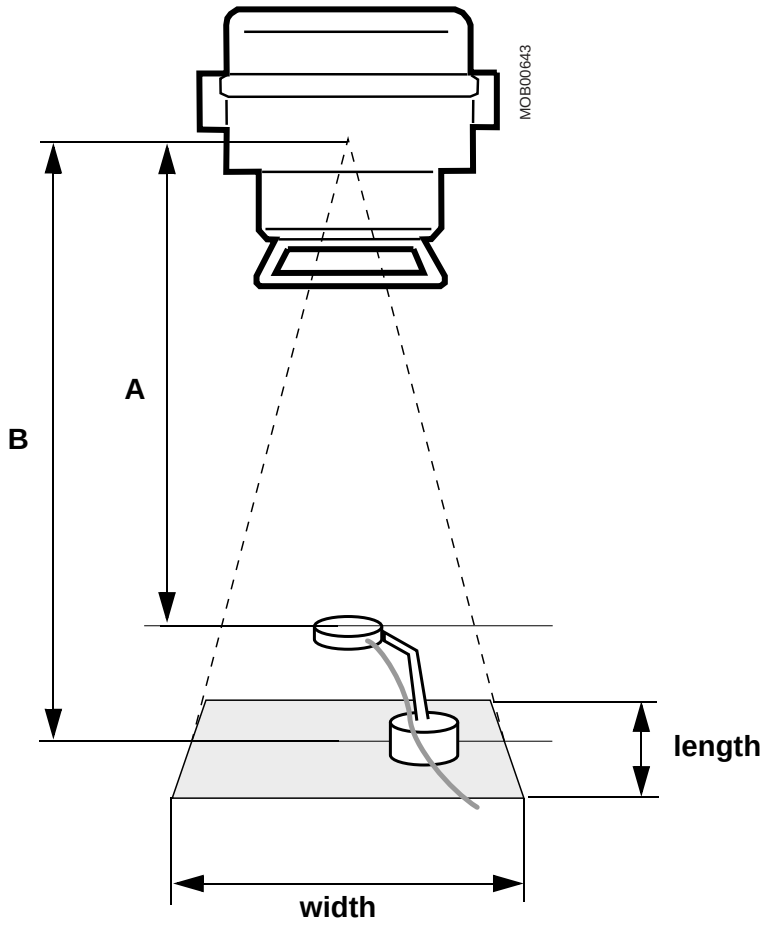

Fig. 2 Setup

7. Measure the Focus - dose meter distance (**A** / Fig. 2) and then the **width** and the **length** of the light field on the surface. For optimal accuracy, place an unexposed film cassette on the surface, and measure the exposed area width and length on the film after an exposure has been released.
8. Measure the Focus - light field/surface distance (**B** / Fig. 2).
9. Calculate the reference area according to the following formula:

$$\textit{Reference area} = \frac{A^2}{B^2} \cdot (\textit{width} \cdot \textit{length}) \quad (\textit{unit } m^2)$$

10. Set kV to 102 and mAs to 20 and release an exposure.
11. Record the dose value measured with the dose meter.
12. Calculate the reference DAP value using the measured dose value according to the following formula:

$$\textbf{\textit{Reference DAP value}} = \textbf{\textit{measured dose value}} \cdot \textbf{\textit{reference area}} \quad (\textbf{\textit{unit}}\ \mu\textbf{\textit{Gy}}\ \textbf{\textit{m}}^{\textbf{\textit{2}}})$$

13. Record the DAP value measured with the DAP measuring system (DAP value from display).
14. Calculate a comparison with the following formula:

$$\textbf{\textit{Comparison value (\%)}} = \frac{\textbf{\textit{100}} \cdot \textbf{\textit{DAP value from display}}}{\textbf{\textit{Calculated DAP value}}} - \textbf{\textit{100}}$$

The comparison value shows the deviation between the actual DAP value (measured with the dose meter) and the DAP value measured with the DAP measuring system. If the comparison value is negative, the DAP display shows a value that is lower than the actual value, and vice versa.

If the comparison value is less than ±5%, the calibration is completed.

15. To correct the deviation, press the “UP” button on the calibration tool (for negative comparison values) or the “Down” button (for positive comparison values). Pressing a button once corresponds to approximately 0.5% change of the comparison value.

NOTE **The middle push-button on the DAP calibration tool is for test purposes. It has the same function as the test button on the DAP display.**

16. Repeat steps 10. to 15. until the deviation is less than ±5%.
17. System OFF.
18. Remove the DAP calibration tool and reconnect the DAP ionization chamber to board D70 (pos. 1 / Fig. 1).
19. System ON.
20. Press the reset and the test buttons to complete the calibration procedure.

Miscellaneous service issues

No further service or maintenance shall be performed on the DAP ionization chamber and the DAP display. Note that the warranty becomes void if the DAP ionization chamber or the DAP display are opened or altered in any fashion.

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Chapter 1	One warning symbol revised.
Chapter 2	Section “Final procedures” revised.
Chapter 3	Completely revised.

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